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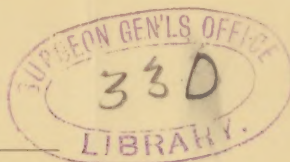
SALT IN DERMAL HYGIENE
AND THERAPEUTICS

BY

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SALT IN DERMAL HYGIENE AND THERAPEUTICS.

THE writer's observations are based on experiences gained by twelve summers' residence at the seaside, and two months recently spent in the salt-making regions of western New York. During these periods he has carefully watched the effects of salt water on both the normal and diseased integument. Before referring to these, however, it will be well to consider the composition of sea water and of the natural brines met with in the interior of the country.

Sea water varies slightly, both in strength and composition, in different parts of the world, but on the average contains about 2.5 per cent. of salt. Many of the brines from the interior contain as much as 25 per cent., and none of them from which salt is manufactured contain less than 15 per cent. Salt is obtained from sea water by solar evaporation, and is produced in large quantities at Turk's Island, in the West Indies, and at various points along the shores of the Mediterranean Sea. Salt thus obtained is met with in commerce in large, hard crystals, more or less discolored by various impurities, and is commonly known as sea salt. It usually contains about 95 per cent. of chloride of sodium, together with a varying, but small, quantity of magnesium chloride, magnesium sulphate, sodium sulphate, calcium sulphate, etc. It is commonly supposed to contain iodine and bromine, or some of their compounds, but this is probably an error. Sea water undoubtedly contains a trace of iodine, but analysis fails to show its presence in commercial sea salt.

Sea water and sea salt, however, contain a peculiar ingredient to which little attention has heretofore been paid. I allude to a certain glutinous principle of organic origin concerning which Ore¹ says: "We find in all sea waters a principle which is not referred to in the majority of chemical analyses and the importance of which should not be overlooked. This principle, the

¹ Nouveau dictionnaire de Médecines et Chirurgie, T. ix.

organic element of sea water (*mucosité de la mer* of Bory de Saint-Vincent), belongs to the group of organic substances and is analogous to the coagulable substances of living bodies, but, like casein, is not coagulated by heat. This principle exists chiefly, according to Roccas, in those parts of the sea which abound in animal and vegetable life rather than along the barren beaches. Is it an exudation from the algæ which largely contain a glutinous material, or is it the product of the putrefaction of dead animals and vegetables? This is a question that we are not at present able to answer."

The effects of sea-bathing vary greatly with the circumstances under which the baths are taken. A plunge into the sea at a temperature of 60° to 70° causes an immediate chill usually of but brief duration, as the exercise of swimming soon produces reaction and the chill is no longer felt. After twenty minutes or half an hour, if the bath be continued so long, a second chill comes on, due to the gradual but certain abstraction of the bodily heat. This chill persists and becomes intensified as long as the subject remains in the water. On emerging, the bather usually experiences a sticky or clammy feeling on the skin, due to the slime of the sea already alluded to; and this is to many so disagreeable that they sponge or wash off in fresh water before resuming their garments.

The general effects of a bath of this sort vary with the vigor of the subject, the temperature of the water, the duration of the immersion, etc. Those in robust health who are sufficiently prudent to leave the bath before the advent of the secondary chill, and then dress promptly, may derive benefit and renewed vigor from the experience. If, however, the bather is in feeble health, the sea-bath as ordinarily taken, is very apt to result in harm rather than good, mainly in consequence of the abstraction of the animal heat by the water, which is usually from 20° to 30° F. lower than the normal temperature of the body. The local effects on the skin coincide in great measure with the general effects. In a vigorous person, a sluggish eczema or a psoriasis will exhibit decided signs of activity, usually in the right direction, provided the water has been decidedly warm (for sea water), and the bath of short duration, followed by vigorous use of the towel and speedy resumption of the garments. If, on the contrary, the patient be feeble or the bath be too prolonged, the effect will be unfavorable, not only on the general condition, but in its local effects, reparative processes being retarded.

The cutaneous affections that in my experience have derived the most benefit from a systematic course of sea-bathing conducted with prudence and good judgment are chronic eczema, sluggish psoriasis, and the summer eruptions, such as prickly heat, furunculosis and in general, pruriginous affections.

Almost universal experience has demonstrated the advantages to be derived from sea-bathing, in strumous diseases, and we may well believe that strumous affections of the skin respond favorably to this agent. The so-called *scrofulides benignes* of Basin certainly do; but with the *scrofulides malignes* the natural changes are so slow that the effects of an ordinary course of sea-bathing are hardly perceptible. In some cases of lupus there is an associated tendency toward pulmonary tuberculosis that should guard us against too free exposure to the moist air and often raw winds of the ocean.

To derive benefit from sea-bathing it is essential that the water should be comparatively warm and the surrounding air soft and balmy. The duration of the bath should be brief and never prolonged until the secondary chill appears. Free friction on emerging and speedy resumption of the clothing should be enjoined.

Unfortunately sea-bathing can be pursued, in this latitude at least, for but a few weeks only during the months of July and August, and in chronic affections should be supplemented by salt water baths at home, that is, if the greatest amount of good is to be obtained; as the best effects from salt water bathing are rarely noticeable except the baths be continued for several months. To this end sea salt may be employed at home, with such frequency as may be desired. A bath containing five pounds of salt to twenty-five gallons of water will be about equivalent in strength to sea water. Baths from sea salt I have employed to a limited extent only, as the salt is hard, very slowly soluble and more or less dirty and is sold at the drug stores at a ridiculously high price. Baths from sea salt leave the same disagreeable sticky sensation on the skin that follows the use of sea water.

Turning from sea-bathing and the use of sea salt to natural and artificial brines made from white salt, I come to a branch of the subject which has interested me greatly during the past three years. During the period named I have used both personally and on patients baths containing from one-half per cent. to 25 per cent. of salt. The ordinary bath-tub when filled to the usual point holds about twenty-five gallons of

water, and a pound of salt added to it would represent the first percentage, and fifty pounds of salt the second. In the first instance, that is, with the addition of a single pound it is hardly possible by the senses to distinguish any difference between it and an ordinary bath of fresh water, so far as its effects on the normal skin are concerned; but when we quintuple the quantity of salt bringing the strength up to that of sea water we will certainly notice the different sensation it conveys to the skin. The water now seems to possess a peculiar softness and glides over the skin, seeming to wet it more easily than plain water, the feeling being very similar to that produced by water in which a small quantity of sal soda has been dissolved. On emerging from the bath one experiences a sensation of exquisite cleanness, unaccompanied, however, by the dryness and harshness of the skin that follows the use of soda or strongly alkaline soaps. If you increase the salt to ten pounds to the same quantity of water these sensations will be intensified and the skin will seem to acquire an almost preternatural softness and flexibility. These effects be it understood are to be expected when the temperature of the bath is high, say from 95° to 97° F. and the immersion continued for fifteen or twenty minutes accompanied with moderate friction with a coarse linen towel or soft brush while in the water.

White salt here referred to is that obtained from the natural brine wells in the interior. It should be of coarse grain and readily soluble. It differs from sea salt in being purer, containing from 97 to 98 per cent. chloride of sodium. It is cleaner, making a clear solution, instead of one more or less turbid, and is free from the disagreeable scum present when sea salt is used. It will dissolve in one-third the time required for sea salt, and can be obtained at one-third the cost. These features make it much nicer to use, but popular prejudice is in favor of sea salt, owing to the mistaken notion that the latter contains iodine, etc. To meet this, manufacturers have been known to artificially color white salt with decoction of tan bark, and even to mix with it a small quantity of earth to make it resemble the really less desirable article.

During the months of April, May and June of the present year, I employed this weak 5 per cent. brine for ordinary bathing, using, of course, no soap, and found that, as a cleansing agent, it was fully equal, if not superior, to the usual soap and water. It removed the bodily odors and exuviae from the skin, as readily as soap did, and far more thoroughly. Further, the

axillæ and other hairy parts remained sweet and clean and free from odor for a longer period than would have been the case after the most thorough use of soap.

This cleansing and deodorizing effect of salt in 5 per cent. solution was entirely new to me, and appears to be an exceedingly valuable feature. Another point in favor of the 5 per cent. brine bath is the fact that the skin exhibits a softness and suppleness that I have never experienced from any other form of bath, be it Turkish, Russian or Roman. Soda is equally effective in these respects, but tends to make the skin dry and harsh. Considered purely as a luxury, the brine bath is to my own taste to be preferred to the baths above mentioned, and with the added advantage of being cheaper and readily obtainable at home.

I have experimented also with baths containing 10 per cent., 20 per cent. and 25 per cent. of white salt. As regards the 10 per cent. baths, it did not seem to me that the effects differed sufficiently from the 5 per cent. bath to make it worth while to use this greater strength. During July and August of this year I took about twenty baths with the salometer standing at 80° to 100° indicating strengths from 20 per cent. to 25 per cent. The bath-tub was of specially large size, holding about 100 gallons, and was supplied with saturated brine from large storage tanks connected with one of the extensive salt manufactories in western New York. There was also a pipe which supplied hot fresh water. By these means it was easy to secure any desired temperature and strength of solution. The strength generally employed was 20 per cent. On entering a bath of this description one is surprised by the extreme difficulty of reaching the bottom of the tub, such is the buoyancy of the water! In fact, with the body completely extended and quiescent this is impossible, and apparently one-fifth of the body remains above the surface. While in the bath the water feels soft and pleasant, and is in no wise irritating except to a mild degree to the mucous membranes. A peculiarity of the saturated brine is the difficulty with which it wets the skin. On emerging, the fluid rolls off almost like water from a duck's back, leaving here and there a few adherent drops. Passing the hand over the surface removes these, and a towel was entirely unnecessary and never employed, the garments being immediately resumed.

In the treatment of cutaneous diseases I have found weak brine baths of essential service in not a few cases. In acute moist eczema it is well known that a bath in plain fresh water,

with or without soap, usually aggravates the local lesions, due, I believe, to absorption of water by the exposed malpighian cells. If, however, from half a pound to a pound of salt be added to the bath (twenty-five gallons), these effects will in great measure be obviated, and the patient will state that his skin feels better after than before the bath. Thorough cleansing of the surface may thus be obtained without the usual inconveniences.

In sub-acute eczema, in psoriasis, in furunculosis, in irritable summer rashes, whether of a papular or pustular character, in urticaria, and in various forms of scrofulosis, and in pustular and ulcerative syphilides, the 5 per cent bath (ten pounds of salt to twenty-five gallons of water) is to be recommended, not only as a great source of comfort to the patient, but as unquestionably a therapeutic agent of great ability.

In prescribing these baths, I usually direct that the water be as hot as could be comfortably borne during an immersion of fifteen to twenty minutes. Cold brine baths, sponge baths, etc., I have experimented with too little to enable me to arrive at any conclusions whatever.

While attention is here chiefly called to the local effects of brine baths, their influence on the general health is not to be overlooked. In most instances a course of twenty to thirty baths, taken daily, or thrice weekly, has been followed by manifest improvement when there was previous impairment of the health. On the other hand, I have never noticed any ill effect from their use.